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DIY Fractal Antenna

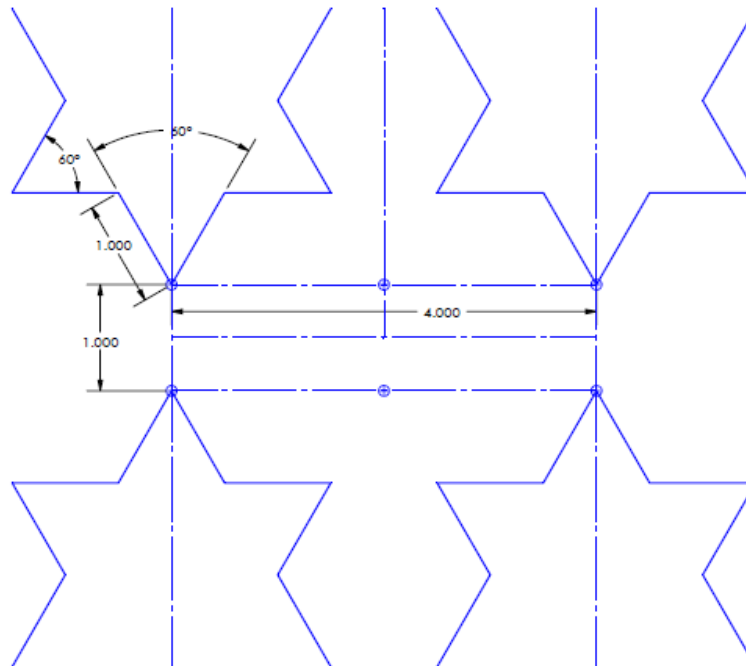
So, first, what is a Fractal Antenna?

According to Wikipedia - "A **fractal antenna** is an antenna that uses a [fractal](#), [self-similar](#) design to maximize the length, or increase the perimeter (on inside sections or the outer structure), of material that can receive or transmit [electromagnetic radiation](#) within a given total surface area or volume."

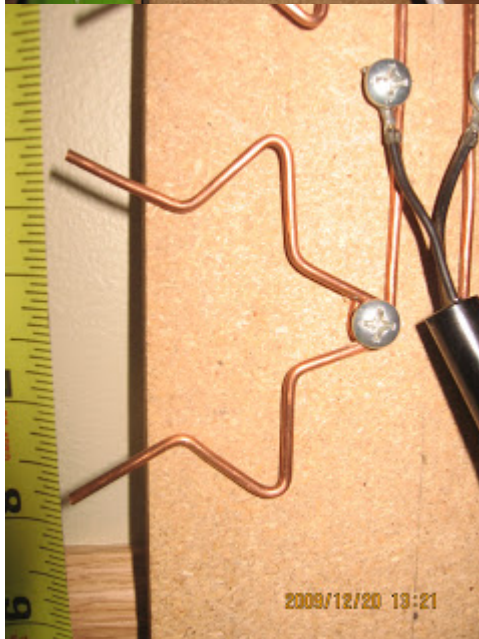
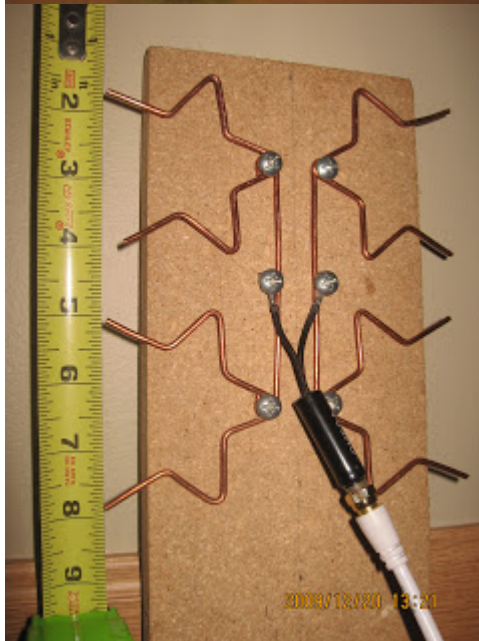
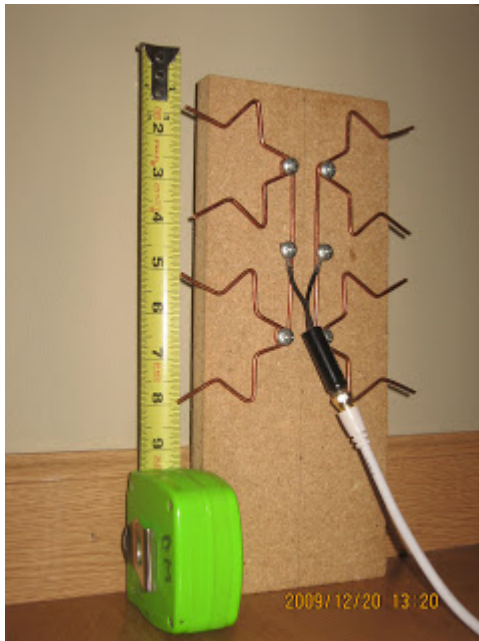
Or more to the point, making more symmetrical curves allows the antenna to be physically smaller, yet maintain much of the characteristics of an antenna of larger size while using the same amount of raw material.

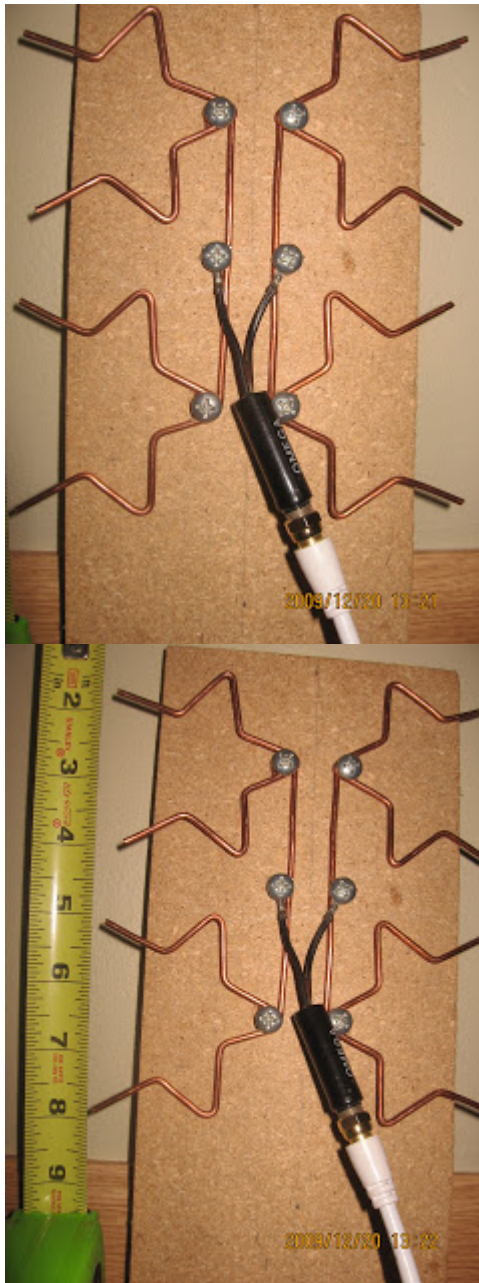
I decided to try out a build of this antenna, as, my brother lives in an apartment who has a super that would not allow for an antenna the size of a Mclapp or Gray Hoverman. Basically I used the design that is offered on this great website: <http://ruckman.net/archives.htm#DTV>. For the elements and phase lines, I used left over 10AWG wire from the Gray Hoverman/Mclapp builds. I cut the pieces at 8" lengths, and marked them every 1". I used the template that can be downloaded here: <http://ruckman.net/downloads.htm#FRACTALTEMPLATE> which aided in making all my bends.

The design from the link above is here:



The finished product is shown in the pics below:





I put it all together while visiting my parents, and tried it out on their TV. I placed it on the floor and leaned it against a wall, and to all our amazement, this little sucker actually pulled in CBC 5-1 (20) from Toronto. Holding it on top of the TV, I was able to pickup OMNI2 (44-1) as well. At home, I picked up CHCH 11-1, SunTV 15-1, and CTS 36-1 with it sitting facing out my livingroom window. Judging by these results, I think my brother should be able to pickup almost all the stations broadcasting from Toronto, for he's only ~5kms LOS from the CN Tower and First Canada Place.

And it is small enough for his super to not even notice. Hope he likes part of his Christmas gift. Gees I hope he doesn't read this before Christmas.

23/12/09

Took some screen captures of the stations that this little fractal was able to pickup around my house. CHCH and SunTV. Would like to get it higher and see if I can pickup anything more, maybe even something like CW23 from Buffalo.



2/1/10

Just before New Year's I quickly assemble a second fractal to pickup local CHCH (18.1) from my livingroom window. This is just to get some local TV until I finally run the cable for my two SBGH antennas in the attic. I wanted to get this antenna built before New Year's day because CH was going to play a slew of Star Trek movies all day long. Well, it performed as expected. I took it over to the in-laws and on their TV, I picked up CBC as well (depending on the antenna placement). Back at my house, later, I picked up CW23, though it froze too much and was un-watchable.

I also should report that my brother liked the fractal I gave him for Christmas. Though he doesn't have a TV with a built-in ATSC tuner, he was able to pickup 3 analog channels, which came in crystal clear. He also picked up a few others, but they were snowy he said. I sent him a channel list of what he should be getting via analog. I should also mention to him to change that cable I loaned him. I quickly built it (put a F connector on the one end), and I wasn't really happy about the installation. I suspect that if the cable is replaced, he should be able to get a few more analog stations in the clear.

Well this completes my fractal build and testing. It is a great little antenna that is very good at picking up local stations that are no more than 15 miles out. This antenna is very easy to build, provided you can bend wire properly. If you have some spare 14AWG electrical wire kicking around, you should be able to assemble this antenna in under 1 hour. Again, this antenna works, depending on what stations are broadcasting in your area. Though I was successful at picking up stations up to (and in the case of CW23, more than) 30 miles, I would not recommend this antenna for this purpose, unless your able to get it outside and high. This would also require using weather resistant materials.

Have fun.

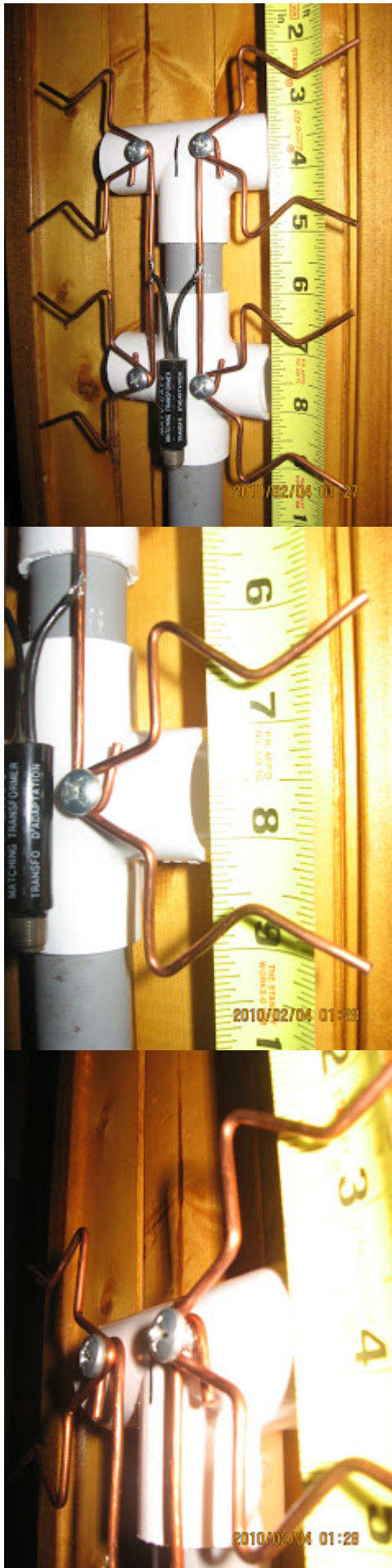
5/1/10

Well this is interesting. The last few days I've been able to pickup CW23 clean and watchable with this antenna sitting in my livingroom window. To note, this transmitter is sitting ~50miles away. All I did was move it about 8 inches one way and it went from unwatchable to a constant lock. Who would'a thunk. The signal to noise meter is sitting around 19dB so it is not the strongest lock when compared to my GH and M4 builds, but still, pretty impressive for this small antenna.

4/2/10

I rebuilt the second fractal on electrical conduit and PVC fittings, like all my other antenna builds. Below are the pictures of what it looks like now. I'm going to replace the original fractal that I gave to my brother for this one (along with the with a new RG6 cable). It pretty much behaves on par with the other builds. It be neat to get it high to see if I can pickup any other Buffalo channels that CW23.





Here is a screen capture of CW23:



Disclaimer:

I am not an electrical/electronics engineer, nor am I claiming to be a professional at designing electronic circuits, I am, though, an Electronics Technologist, and have a firm understanding of all the circuits that I have built. If you choose to try some of the projects that I have done, I take no responsibility to your loss of personal health or property. All projects are performed at your own risk.

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